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## DISSOCIATION BY DISPLACEMENT: A PHASE OF SOCIAL SELECTION.\*

THE quality of population — the fundamental factor in the evolution of societies and civilization — is conditioned on the one hand by the laws of heredity and on the other by the laws of selection. Of these forces, heredity is the great conservator. Each new organism is, broadly speaking, a reproduction of the character, physical and psychic, of its ancestors and of its race. The child, according as one or another of the struggling hereditary forces has gained the ascendancy, exhibits certain characteristics of its immediate parents and also certain traits of more remote ancestors,—traits which may have lain dormant with one or more generations, but which have, nevertheless, been transmitted through them. The characteristics that an individual may acquire from nurture, education, habit of life, and indeed from experience and environment generally, are seldom, if ever, transmitted to his posterity. Of the qualities with which prenatal influences have endowed him, those which are most individual, which depart furthest from the ancestral type, tend usually to disappear in subsequent generations. Finally, most of the intermediate forms resulting from the crossing of different types tend either to become extinct or to revert more or less closely to that one of the ancestral types which proves itself the stronger. Thus throughout the phenomena of

\* I take pleasure in acknowledging my indebtedness for nearly all that may be of value in this article to Dr. Georges de Lapouge. Lapouge may well be considered to share with Galton the honor of having founded the selectionist school of social science. While Darwin himself, Paul Broca, Herbert Spencer, and others early indicated the bearing of the new biological doctrines of heredity and selection upon sociological problems, Galton was the first to investigate seriously the working of these forces in human society; and Lapouge has been the first to develop, on the basis of the data both of biology and of anthropology, a comprehensive theory of social and racial selection.

heredity there is the strong tendency towards the constant reproduction of the established forms.

But this conservative tendency is overborne by the powerful transforming forces which we group under the common caption "selection." These are the forces that determine what varieties of life heredity shall be permitted to conserve, that decide which among the rival types shall reproduce themselves more abundantly, which shall merely maintain their number, which shall decrease, and, finally, which shall vanish from the earth. Selection is thus the decisive factor in evolution.

In formulating the principle of natural selection, Darwin gave the first clear explanation of the processes of organic evolution, and changed the whole character of the biological sciences. The principle of selection will cause a scarcely less radical revolution in the social sciences when it comes to be generally applied to them.\* But the principle itself meanwhile will have to be greatly modified. It will have to include not simply or chiefly *natural* selection, but also *social* selection. The forces which in human society determine the multiplication of certain elements of the population and the decrease or extinction of others are—as Paul Broca long ago pointed out—not, for the most part, the forces of external nature, but rather those arising from the character of that society and of the individuals who compose it.

It is, indeed, possible to extend the sense of the word "natural" to the point of embracing all phenomena, including all human and social activities; but with this extension the word ceases to have any real significance, and becomes a superfluous and, indeed, confusing adjective. A confusing adjective, because the peculiar connotations associated with the phrase "natural selection" render it absolutely misleading. In the organic world, particularly

\*For an account of some of the applications of the doctrine of selection to ethical and social problems see Dr. Alexander Tille, *Von Darwin bis Nietzsche, ein Buch Entwickelungs-Ethik* (Leipzig, 1895).

in its lower stages, vast numbers of individuals die from sheer inability to obtain nourishment, and vast numbers become the prey of other creatures. Selection is effected largely through the direct elimination of individuals. The employment of the phrase "natural selection" tends, then, to carry the conception of the elimination of individuals as such into the realm of sociological phenomena, where, on the contrary, selection is effected mainly by the gradual and almost unnoticed decrease and elimination of certain families and of certain racial elements of the population. Another mischievous assumption to which the employment of the phrase "natural selection" is sure to give prevalence is associated with the half-superstitious reverence of many minds for any thing or condition to which the word "natural" in any one of its varied senses can be applied. In the discussion of the workings of selection the sort of sanction derived from this most ambiguous of adjectives is the more dangerous, because it corresponds more or less closely with a fundamental error. "Natural selection," permitting only "the survival of the fittest" (another misleading phrase), is often assumed to insure the increase of the higher forms and types of life and the extinction of the lower. Far as this conception is from the truth in regard to the processes of selection in the animal world, it is at least equally erroneous when applied to the phenomena of social evolution. In point of fact, the forces of evolution operate in favor of the types best suited to the *ensemble* of the conditions. These conditions by no means always preserve the types most essential to the higher development of humanity. Indeed, they often exterminate these types. War and militarism, persecution, religious celibacy, social and professional ambitions, the congestion of population, are among the agencies which have often hindered the increase of the elements within a given community superior in physical, mental, and moral qualities; and in the struggle between

nations and civilizations the brute forces of selection have destroyed races of the highest worth for human progress.\* The phrase "social selection," free from these misleading connotations, is in every way preferable as a general term for the selective forces at work in human society.†

War, colonization, the relative rate of increase of populations, the struggle for industrial, political, and intellectual ‡ supremacy, are the most obvious phenomena of selection, as far as it operates between nations as such. More fundamental are the forces of selection operating within each nation and community. War and military service, the internal migration of population and the growth of cities,§ the punishment of criminals, the assist-

\* See for a development of this thesis the remarkable forthcoming work of Lapouge, *Les Selections Sociales*, many of the conclusions of which were anticipated in his essay under the same title in the *Revue d'Anthropologie*, 1887, p. 520. Some other phases of the same contention are brought out with a less pronounced pessimism by John Berry Haycraft in his excellent book, *Darwinism and Race Progress* (London, 1895). A similar argument is presented in W. Schallmayer's *Die drohende physische Entartung der Culturvolker* (Berlin). Professor T. H. Bradley, of Oxford, in a somewhat extreme article in the *International Journal of Ethics*, 1894, p. 283, points out the tendency of the struggle for existence to become "a mere struggle between rival fertilities," from which "the morally superior more and more refrain." Benjamin Kidd in his work on *Social Evolution*, while admitting, and indeed insisting (chap. ix.), that the selective forces of evolution do not favor intellectual development, maintains that they do favor the development of those ethical qualities which subordinate the "enlightened self-interest of the individual to the good of the social organism." See also C. H. Pearson, *National Life and Character: A Forecast* (London, 1894); D. G. Ritchie, *Darwinism and Politics* (second edition, London, 1891); Professor Huxley, *The Struggle for Existence* (*Nineteenth Century*, February, 1888); and Albert Russel Wallace, *Human Selection* (*Fortnightly Review*, October, 1891).

† Paul Broca was, so far as I am aware, the first to urge the phrase "la selection sociale." He declared very truly, "C'est la société elle-même qui devient le théâtre principal de la lutte pour l'existence." See his article *Les Selections* in the *Revue d'Anthropologie*, 1872, p. 705.

‡ M. J. Novicow, in *Les Luttes entre les Sociétés Humaines et leurs Phases Successives* (Paris, 1893), develops, with a degree of exaggeration, the importance of intellectual supremacy in the rivalry between nations.

§ Otto Ammon, in his masterly work *Die natürliche Auslese beim Menschen, auf Grund der Ergebnisse der anthropologischen Untersuchungen der Wehrpflichtigen in Baden und anderer Materialien* (Jena, 1893), has been the first to estab-

ance of the needy and defective classes, persecution or social ostracism on religious or other grounds, political favoritism and political antipathies, celibacy, law, custom, social and religious \* sentiment as regards marriage and sexual relations, social ambitions in connection with the standard of living, are among the influences which, for good or ill, determine the increase or decrease of the several constituent elements of the population. Behind the action of the most important of these selective forces is the psychological character of the racial † elements which enter into the composition of peoples ordinarily regarded as homogeneous. So fundamental is the relation between the forces of selection in their general or abstract aspect—that which alone is taken into account by most sociologists, even among those who devote attention to the phenomena of selection—and the racial composition of the populations on which these forces act that the phenomena of social selection may well be considered, both as regards

lish the profound selective influence of the drift of population to the cities. A summary of some of the more important of his results will be found below.

\*Mr. Benjamin Kidd's ingenious argument in his *Social Evolution*—to which it is difficult to do justice in a bare summary—is devoted to showing the necessity of the prevalence of convictions superior to the considerations of rational self-interest,—and so, in a broad sense, "religious,"—in order to render a people permanently successful in the struggle for national supremacy, and indeed, one may say, for national existence. Resting upon a somewhat dogmatic acceptance of Weismann's doctrine of heredity, he urges that not merely progress, but the *prevention of degeneration*, necessitates multiplication "beyond the limits which the average conditions of life comfortably provide for." But a people acting on the basis of rational self-interest will limit population to the numbers which the conditions comfortably provide for. Hence the necessity, in order to insure continued progress, of some ethical or religious sentiment superior to rational considerations. It should be added that Mr. Kidd utterly rejects the possibility of an artificial or purposeful selection.

† The term "racial" is employed in this article not in either of the ordinary senses in which one speaks (in one sense), for example, of the Caucasian race, or (in the other sense), for example, of the French race. It is used, for the lack of any better term, to refer to the distinction made by anthropologists, mainly on morphological grounds, between the different elements which enter into the population of a single country, or, indeed, of a single city. The "racial" composition of European peoples will be touched upon as we proceed.

their causes and as regards their results, as very largely phenomena of *racial* selection.\*

Social and racial selection in their various phases form, however, a matter the discussion of which, beyond these few prefatory remarks, would lead us too far from the subject of the present paper, which confines itself to facts concerning only one of the forces of selection, and concerning indeed only the initial stages of the action of that single force. Our immediate subject may, for the sake of precision, be designated by the somewhat technical phrase, dissociation by displacement.

“Dissociation” is employed to designate in general a subordinate, and usually a preparatory, phase of selection,—a phase not ordinarily distinguished with care, yet worthy of separate treatment. Selection means strictly the relative increase of certain elements of the population, the relative or absolute decrease of other elements. It is the measure of the struggle between the different elements for existence, for perpetuation. But there is also the subsidiary struggle for comfort, wealth, power, and social position, not simply as personal, but as hereditary possessions. The result of this struggle is a certain social

\* The clear perception of the racial or anthropological character of social selection and the development of the laws of racial selection are among the important contributions of Dr. Georges de Lapouge to social science. The outlines of his theories were published late in the eighties, but have been subsequently modified and amplified. The fullest statement will be found in his forthcoming work, *Les Sélections Sociales*. See also in the *Revue d'Anthropologie*: *La Dépopulation de la France* (1887, p. 69); *L'Anthropologie et la Science Sociale* (1887, p. 156); *Les Sélections Sociales* (1887, p. 519), *De l'Inégalité parmi les Hommes* (1888, p. 9); *L'Hérédité dans la Science Politique* (1889, p. 169); *Questions Aryennes* (1889, p. 181); *Crânes Modernes de Montpellier* (1889, p. 687). In *L'Anthropologie*: *Crânes Modernes de Montpellier*, 2<sup>e</sup> series (1890, p. 36); *Crânes Préhistoriques du Larzac* (1891, p. 681); *Crânes de Gentilhommes et Crânes de Paysans* (1893). In the *Revue de Sociologie*: *Le Darwinisme dans la Science Sociale* (1893, p. 414); *Lois de la Vie et de la Mort des Nations* (1894, p. 421). In *Globus* (Band 64, Nr. 20): *Die Auslese durch den Krieg*. In the *Bulletin de la Société Langueudocienne de Géographie* (xvii, 1894), *Matériaux pour la Géographie Anthropologique du Département de l'Hérault*.

stratification, a more or less sharp separation of different social elements, which in extreme cases becomes a system of rigid and hereditary caste. Such a process, when it takes place in a society previously homogeneous, is an instance of one sort of dissociation. It is a case of social or economic separation of classes, an instance what may be called *dissociation by stratification*.

Dissociation may equally take the form of the geographical separation of different elements through the migration of one or another among them. This is what we designate as *dissociation by displacement*. If we suppose, for example, that the dream of certain visionaries were realized, and that the 6,900,000 negroes in the United States should be induced to migrate to Africa, we should have an instance on an immense scale of what is in fact an extremely common phenomenon,—the separation of the elements of a population by the migration of certain of those elements; that is to say, dissociation by displacement.

This form of dissociation is, in a sense, intermediate between selection and dissociation by stratification. In selection the vanquished element suffers a numerical decrease (at least relatively to the successful element). In dissociation by stratification there is no necessary change in the relative numbers of the two elements, but simply a change in their mutual relations. In dissociation by displacement there is a marked change in the relative numbers of the different elements so far as concerns the geographical districts which respectively furnish and receive the migration. But, from the broader point of view, there is no necessary numerical alteration, at least in the immediate result. Migration does not alter directly either the quantity or the quality of the world's population.

Indirectly, however, dissociation is the precursor of profound changes in the relative numbers of the classes which have composed the hitherto homogeneous population, and

is therefore the preliminary stage in the process of selection. Thus the gaining by one class in the community of a certain social grade is often but the preliminary to its diminution or perhaps to its extinction. In ancient times the special dangers to which the upper classes, the warriors, were exposed;\* in modern times the higher or more luxurious standard of living that the higher position attained involves,† — have often made relative extinction the price of success.

\* Dr. Lapouge has also shown how the decimating effects of warfare account for the extinction of the original stock of ancient peoples, the consequent deterioration of the population, and the resulting collapse of the political and military power of the nation which the genius of its original citizens had built up.

† “There is good reason to believe that the career necessary to individual success in the life struggle of modern societies is one which carries with it and necessitates relative sterility. . . . It would indeed be difficult to conceive any plan more inimical to the future of the race, or better designed to sap the power of a nation, than that of taking from it in perpetuity those possessed of innate capacity,—a result which follows when the best citizens are induced, for the sake of gifts and honors, to relinquish their obligation to the race of being the parents of many children.” Dr. John Berry Haycraft, *Darwinism and Race Progress*.

Francis Galton has shown that the low birth-rate among the British aristocracy is largely due to the numerous marriages of peers with heiresses, with whom comparative sterility is often hereditary. “Among the wives of peers, 100 who are heiresses have 208 sons and 206 daughters. 100 who are not heiresses have 336 sons and 284 daughters.” *Heredity Genus* (second edition, London, 1892), pp. 123-133.

Dr. William Ogle, from an examination of a large number of cases from English marriage registers of 1889, found the average ages at marriage of the men in different occupations and of their wives to be as follows:—

OCCUPATION OF HUSBANDS.	AVERAGE AGE AT MARRIAGE.	
	Of the Men.	Of the Women
Miners . . . . .	24.06	22.46
Textile operatives . . . . .	24.38	23.43
Shoemakers and tailors . . . . .	24.92	24.31
Artisans . . . . .	25.35	23.70
Laborers . . . . .	25.56	23.66
Commercial clerks . . . . .	26.25	24.43
Shopkeepers and shopmen . . . . .	26.67	24.22
Farmers and sons . . . . .	29.23	26.91
Professional and independent class . . .	31.22	26.40

The phenomenon of the comparatively slow increase of the higher social classes, to which these last figures bear witness, in England is extremely general: it is probably the rule in nearly every European population. An analog-

But dissociation by displacement is the beginning of the selective process upon a vaster scale. While the colonization of unfavorable regions sometimes exhausts the energies and lessens the numbers of the home population without compensating results in the new lands, successful colonization and emigration is, on the other hand, the means of a prodigious expansion of the race of those who leave the mother country.

Less conspicuous, but not less important than the results of these distant emigrations are those which follow from the much more general and constant phenomenon of migration within a single country, from region to region, from the highlands to the fertile plains, from the rural districts to the cities. This internal migration is a potent form of the dissociation of the very different elements of which the population of a country is composed, and constitutes the first stage in a process of selection between these elements which leads to the increase of one and the decrease, relative or perhaps even absolute, of the other. Especially in the case of the influx to the cities the selective process tends almost to exterminate the migratory element.

For the cities are great consumers of population. Ammon has compiled the family history, so far as concerns migration, of the army conscripts drawn from the cities of Karlsruhe and Freiburg in Baden for three successive years. Out of 1,313 conscripts no less than 1,018 were themselves born in the rural regions of Baden; \* 119 were the sons of immigrants from the rural regions; and only 96 were the sons of men born in these two cities. †

gous tendency is manifest in the relative decrease of the high castes in India. See Barbe, *Un Nouvel État Social dans l'Inde*, in the *Bulletin de la Société d'Économie Sociale* (1894, pp. 761, ff.). See also A. R. Wallace, *Human Selection*; and Cheysson, *L'Affaiblissement de la Natalité Française*.

\* "Rural regions" is to be understood as including all towns of less than 12,000 inhabitants.

† Otto Ammon, *La Sélection Naturelle chez l'Homme*, in the *Revue d'Anthropologie* (1892, p. 722) See also *Naturliche Auslese beim Menschen*, chaps. ii., vi., and xii.

Considerable allowance should doubtless be made for the difference in the number of immigrants in the last twenty-two years, during which the conscripts may have entered the cities, as compared with the lesser influx one and two generations back. Some allowance should further be made for the proportion among the immigrants of past generations of the more or less drifting element, many of whom may have returned to the country, and whose sons would be found among the rural instead of among the urban conscripts.\* Hansen has found from the statistics of the population of several German cities that nearly one-half of their residents are immigrants.† Mr. Llewellyn-Smith has shown that not less than 35 per cent. of the present citizens of London are country-born. M. Bertillon has calculated, on the basis of the statistics of 1886, that, "whereas on the average in the departments of France only 11.25 per cent. of the inhabitants were born outside of the department of their present residence, not less than 34.67 per cent. of the population of the department of the Seine was composed of immigrants." Moreover, the proportion of immigrants is high for all the departments containing the great centres of urban population,— 31.47 per cent. in le Rhône (Lyons); 26.29 in les Bouches-du-Rhône (Marseilles); 26.41 in la Seine-et-Oise (neighborhood of Paris); 19.46 in le Nord (Lille); 17.62 in la Gironde (Bordeaux).‡ Dr. Durand, combining the sta-

\* Dr. R. Collignon has made this last criticism upon Ammon's deduction from the statistics. This drifting element is probably, however, not very large, as is indicated by the following data. Among the conscripts resident in Karlsruhe and Freiburg there were, aside from the 1,313 constituting the three main groups above mentioned, the following small groups: conscripts born in one of these cities of a father born in some other city, 14; conscripts born in neither of the two cities of a father born in one of the large cities of Baden, 40; conscripts born in some other of the large cities of Baden of a father born in the country, 49; conscripts born in the country of a father born in a large city, 12. Ammon, *Naturliche Auslese beim Menschen*, secs. 140-143.

† Georg Hansen, *Die drei Bevölkerungsstufen* (Munich, 1889), p. 27.

‡ Cited by E. Durkheim, *De la Division du Travail Social* (Paris, 1893), p. 324.

tistics of thirty of the principal cities of Europe for a period of ten years,\* has concluded (though perhaps upon rather uncertain evidence) that in the aggregate 78.46 per cent. of the annual increase of the population of these cities is made up of immigrants, and that only 21.54 per cent. of that increase is due to the excess of the local birth-rate over the rate of mortality.† Making all due allowance for the counter-movement back to the country, and for the drift from place to place, it nevertheless remains clear that the great cities are consumers of population, and that, other things being equal, those elements which migrate from the country cityward will tend to become a relatively diminishing element in the total population. In other words, migration to the cities is the preliminary of elimination by selection.

It is, then, a question of the utmost importance for the future quality of the population of a state to determine of what elements the migrants from the country (especially the migrants to the large cities) are in that state chiefly composed. As regards the general quality of the influx to the cities, it is natural to suppose that it would include the most enterprising and capable of the country population; and much evidence could be adduced in support of this supposition from the obvious deterioration of the inhabitants of those rural regions which have suffered a heavy drain to the cities. The researches of Llewellyn-Smith in London show that the influx is far superior to the average of the resident city population. The proportion of country-born is fewest in the districts of greatest poverty (12.5 per cent. in Bethnal Green, 20 per cent. in Whitechapel), largest in the districts of comparative prosperity (59 per cent. in Mayfair, over 50 per cent. in Kensington and Belgravia). It appears, then, that the migrants to the cities are of exceptionally high quality as

\* In most cases the period chosen is that from 1865 to 1874.

† Dunant, *Annales de Démographie Internationale*, No. 3.

compared with the average population. These considerations are, however, but the slightest part of the evidence. Anthropological researches wholly different in method, and much more detailed in their study of the character of the different elements of the population, have recently been completed in several parts of France and Germany, which indicate that the draining of the superior elements from the country is a sociological law of, to say the least, wide-spread application.

From the anthropological point of view, European populations (except in the great southern peninsulas, where the so-called Mediterranean type is abundant) are mainly composed of two great racial elements. The dolicocephalic blond type, distinguished, as the name indicates, by the elongated form of the head, and further by the comparatively light shade of the eyes and hair, and also in general by superior height, forms the characteristic element of the population of the British Isles, of Holland, Scandinavia, and Northern Germany. In more or less pure form it enters, in varying degree, into the composition of the peoples from the Pyrenees to the Black Sea. The great mass, however, of European populations, outside the countries first named above, is composed of brachycephalic elements, distinguished in turn by the relatively round form of the head, and usually by the darker color of the eyes and hair, and by comparative shortness of stature.\*

\* For details of the composition of different peoples see: in general, the writings of Lapouge, already cited; Dr. John Beddoe, *The Anthropological History of Europe* (London, Rhind Lectures for 1891); Dr. Paul Topinard, *Anthropologie Générale* (Paris, 1885). For France, Lapouge, especially *Mériaux pour la Géographie Anthropologique du Département de l'Hérault*, in *Bulletin de la Société Langueudocienne de Géographie* (1894); Dr. R. Collignon, *L'Indice Céphalique des Populations Françaises* (Paris, 1890) and *Anthropologie de la France: Dordogne, Charente, Corrèze, Creuse, Haute-Vienne* (Paris, 1894). For Germany, Dr. Otto Ammon, *Naturliche Auslese beim Menschen* (Jena, 1893) and *Die Körpergrösse der Wehrpflichtigen in Grossherzogthum Baden* (Karlsruhe, 1894); and Virchow's investigation of German school children. For Italy, Dr. R. Levi, *Sulla Statura degli Italiani* (Florence, 1883). For Spain, Dr. Oloriez, *Distribucion del Indice Cefálico en España* (Madrid, 1894).

The brachycephalic population is industrious, frugal, often receptive and intelligent. It is fond of uniformity, clings firmly to tradition, and lacks the power of initiative. In religion the brachycephalic masses remain generally faithful to the Catholic Church. In war and politics they have for the most part followed the leadership of the more dominant elements of the population, usually the dolico-blond. The dolico-blond type is less uniform and mediocre, presenting greater extremes on the one hand, of high capacity, and, on the other, perhaps, also of deficiency and worthlessness. At its best, at any rate, it is more domineering, more enterprising, more self-reliant. Its mental horizon is wider, its ambition and courage more impetuous. In religion it tends towards Protestantism. In politics it demands for itself the greatest degree of freedom, but is always ready to assume the task of governing the more passive populations. There is strong reason to think that it has been the dolico-blond or some closely allied type that has ruled most of the great civilizations and undertaken most of the great conquests of the past. It is this element that has in modern times expanded its numbers and its power over so much of the newly discovered or newly available parts of the world.\*

\*The writer is aware that this characterization of the two types is dogmatic, and perhaps somewhat overstated. For the purposes of this article, however, it need only be accepted provisionally; and it would take us too far afield to enter here upon any elaborate discussion of the evidence bearing upon the psychological character of races. The proof of the more active character of the dolico-blond type is to be found in the history of the achievements of peoples largely composed of this type, or, at the least, ruled by it; in the study of the dominant part played among brachycephalic peoples by dolicocephalic aristocracies; in the comparison of the relative number of great discoverers and leaders of human thought that have been born in the regions where the two types respectively predominate; and in the consideration of the present differences in national character, according as the two types enter into the composition of peoples. See the works of Lapouge and Ammon, above cited. For criticism of the distinction see M. Colajanni, *Sociologie Criminale*, and A. Fullet, *La Psychologie des Peuples et l'Anthropologie*, in *Revue des Deux Mondes*, March 15, 1895. It is a significant indication of the weight of evi-

There is then a correlation between the psychological character of a population and its morphological structure. We have now to consider the evidence to show that there is a close correlation between the morphological characteristics of a population and its choice of habitation. Among the first to suggest this latter relation was Dr. Durand de Gros. In the early days of the Society of Anthropology of Paris, he presented statistical evidence that in the department of Aveyron the urban residents of Rodez were considerably less brachycephalic than the surrounding rural population. He sought, however, to explain the difference as the result not of a process of selection, but of the direct modifying effect of environment. The phenomenon observed by him is, nevertheless, an interesting bit of evidence, additional to that now available, of the working of selection along morphological lines through a process of dissociation by displacement.\* Dr. Paul Topinard seems to have been the first to suggest the hypothesis of the influence of migration in dissociating the two elements of the population. In seeking to account for the fact (indicated by the army statistics of the Civil War) that the population of the United States is of taller stature than that of any of the European nations,† and that

dence that is becoming available that M. Fuillet has, since the above article was published, virtually accepted the characterization of the two types which was long ago stated by Topinard, Lapouge, and other anthropologists, and has given in his adherence to Ammon's law of the concentration of the dolicocephalic type in the cities. A. Fuillet, *Dégénérescence?* (*Revue des Deux Mondes*, October 15, 1895).

\* Letter from Dr. Durand de Gros, November, 1894, Dr. Durand de Gros, *De l'Influence des Milieux sur les Caractères de Race chez l'Homme et les Animaux* (extrait des Procès-verbaux de la Société d'Anthropologie, Paris, 1868), p. 16. "Il me reste à citer un fait, observé également dans le département de l'Aveyron, comme un document de plus pour l'histoire de l'influence modatrice des milieux. La brachycephalie est générale, je pourrais même dire universelle, dans la population rurale des arrondissements de Rodez, d'Espalion, et de Milhau, il en reste de la population urbaine; chez celle-ci les têtes sont plus grandes, quelquefois très-grandes, et offrent de nombreux exemples de dolicocephalie frontale prononcée."

† See Topinard, *Anthropologie Générale* (Paris, 1885), table on p. 429.

within the United States the migrants from the Eastern to the Western States are taller than the stationary residents of the former,\* he suggests, as the most probable explanation, "la disposition au mouvement, l'un des caractères de la race blanche de haute taille, qui pousse les sujets grands à (im)migrer de préférence à ceux de petite taille qui descendaient de la race (européenne, celtique, ou) brune aux goûts sédentaires." † The early essays of Lapouge were concerned mainly with the laws of dissociation by stratification, and did not develop the complementary phenomena of dissociation by displacement. Nevertheless, their definite characterization of the brachycephalic elements as relatively passive in contrast with the dolico-blond, and as strongly disposed to cling to their native soil,‡ may be regarded as an anticipatory statement of the law § which subsequent statistical investigations have tended to establish.

The definite discovery of the selective influence of migration—in the concrete form of the law of the movement of the more dolicocephalic elements from the country to the cities—was made by Ammon in the course of his anthropological examination of the army conscripts of the grand duchy of Baden. In a preliminary report published in 1890 || he showed that the population of the cities contained more dolicocephalic and fewer brachy-

\* See Topinard, *Anthropologie Générale* (Paris, 1885), table on p. 452.

† *Ibid.*, p. 452.

‡ This characterization is already clearly brought out in the essay on *La Dépopulation de la France* published in the *Revue d'Anthropologie* for January, 1887.

§ It should be understood that, in speaking of the "law" of the greater mobility of the dolicocephalic elements, I do not mean to imply that such a law will be found to hold true universally, or independently of the composition of the population among which the migration occurs. The question how widely the law is applicable can only be decided by statistical study of the phenomena in widely separated populations. The law appears already to be verified at a considerable number of localities in France and Germany.

|| Otto Ammon, *Anthropologische Untersuchungen der Wehrpflichtigen in Baden* (Hamburg, 1890).

cephalic individuals than that of the neighboring country, and brought forward the hypothesis of the concentration of the dolicocephalic elements in the cities through the dissociative action of migration.\* In 1893 he published his *Natürliche Auslese beim Menschen*, establishing on the basis of more abundant material the law of the concentration of the dolicocephalic elements in the cities, and developing the sociological consequences which result in view of the subsequent decimation, by the forces of social selection, of the elements thus concentrated. An examination pursued during three successive years of the family history of the conscripts resident in the two cities of Karlsruhe and Freiburg showed that the migrants to the cities were, on the average, less brachycephalic, and contained a larger

\*The percentages of the two most distinctive morphological groups in the cities and in the surrounding country were as follows.—

	PER CENT OF "DOLICOIDE" ELEMENT.		PER CENT. OF "HYPERBRACHYCEPHALIC" ELEMENT.	
	In the city.	In the surrounding country.	In the city	In the surrounding country
Mannheim . .	43.4	34.8	10.4	14.5
Heidelberg . .	37.5	17.9	4.6	25.4
Karlsruhe . .	33.0	13.0	16.5	32.9
Lorrach . . .	25.8	21.4	25.8	28.8

"Dolicoide" includes all subjects with a cephalic index of 80 or below (in other words, all subjects the width of whose head is not over 80 per cent. of its length). "Hyperbrachycephalic" in the nomenclature employed by Ammon in this work includes all subjects with an index of 85 or above.

It should perhaps be explained that the "cephalic index" expresses the relation of the breadth of the head to the length, the latter being 100. It is found by dividing the breadth, multiplied by 100, by the length. Accordingly, the wider the head in proportion to its length, or the more brachycephalic the subject, the higher is the index. The average index of a group of individuals is of course found by dividing the sum of the breadth of their heads, multiplied by 100, by the sum of the lengths. According to the method of mensuration employed in France the length of the head is measured from the "glabellae" to the extreme posterior point of the head. According to the method in vogue in Germany (and employed by Ammon in his research) the length is measured from the "glabellae" to the corresponding point at the back of the head in the same plane parallel to the plane of vision. This difference in method makes it difficult to correlate with exactness the indexes obtained by the one system with those obtained by the other.

proportion of dolicocephalic elements, than the population of the rural districts. While the 11,120 conscripts resident in the country and in the towns of less than 12,000 inhabitants were found to have an average cephalic index of 83.5, the 615 immigrants from the country among the conscripts of Karlsruhe had an average index of 83.1, and the 403 immigrants to Freiburg an index of 83.0.\*

The contrast between the constituent elements of the rural population and those of the immigrants appears more clearly if we consider the percentage, among each of the two groups, of the indexes below and above 85 respectively : — †

\* Ammon, *Naturliche Auslese*, sec. 138.

† The researches of Ammon led to the discovery of another most interesting law of racial selection. This law has, however, so far as I am aware, not been directly verified outside of Baden ; and, as it is somewhat less closely connected with the facts which it is the purpose of this article to present, I shall limit myself to a bare statement of it. It is, briefly, that the more dolicocephalic elements are not only more ready to seek the cities, but better fitted to survive for a number of generations the severe selective influences which decimate urban populations. I have already noted in another connection the small number of city-born among the conscripts resident in the cities as compared with the number of immigrants, and the still smaller number of the sons of men born in the cities. Now, of these small numbers representing families which survive and remain in the cities for two or three generations, by far the larger proportion were found to belong to the more dolicocephalic elements. The following table shows the percentage among each of the above groups of indexes below and above 85 respectively —

	PERCENTAGE OF INDEXES	
	<i>Below 85.</i>	<i>85 or above.</i>
<b>KARLSRUHE.</b>		
Among 615 immigrants from country	66.6	33.3
119 subjects born in Karlsruhe of fathers		
born in country . . . . .	81.6	18.4
48 subjects born in Karlsruhe of fathers		
born in Karlsruhe . . . . .	87.6	12.4
<b>FREIBURG.</b>		
Among 403 immigrants from country . . . . .	68.7	31.3
80 subjects born in Freiburg of fathers		
born in country . . . . .	72.3	27.7
48 subjects born in Freiburg of fathers		
born in Freiburg . . . . .	85.2	14.8

The population of the cities is thus by a double set of causes rendered more dolicocephalic than that of the country. The stream of immigration contains, in the first place, a disproportionate share of dolicocephalic elements ; and, in the second place, these elements are endowed with a greater capacity of resistance to the decimating forces of urban selection.

	PERCENTAGES OF INDEXES.	
	<i>Below 85.</i>	<i>85 or above</i>
Among 11,120 rural subjects . . . . .	61.8	38.2
615 immigrants to Karlsruhe . . .	66.6	33.3
403 immigrants to Freiburg . . .	78.7	31.3

If these investigations of Ammon stood alone, the phenomenon of the concentration of the dolicocephalic elements in the cities might perhaps be regarded as due to some merely local or accidental set of causes. But the evidence is much wider, and indeed, as we shall see, tends to establish a more generalized law of dissociation than that formulated by Ammon. An indirect support for Ammon's law can be found in the fact that it furnishes an explanation for certain data long in the possession of anthropologists. Observers in various localities have found that the skulls of the population of earlier centuries were, on the average, both longer and narrower than the skulls of the present generation.\* Indeed, so general is this phenomenon that a German anthropologist of repute has used it as the support of a theory that education and the intellectual influences of civilization have effected a gradual increase in the breadth of the head. The true explanation of the fact is that the selective forces at work — of which dissociation by displacement has been one †— have produced a decrease in the proportion of the dolicocephalic elements in the total population.

Direct proof of the law of the urban concentration of the dolicocephalic type is now available in larger quantity. I have already noted that the fact of the less brachycephalic character of the urban population was early observed in Aveyron by Dr. Durand de Gros. The United

\*See *Naturliche Auslese*, secs. 109–116; Lapouge, *Revue Internationale de Sociologie* (September, October, 1893), pp. 423–427, and Durand de Gros, communication to the Paris Society of Anthropology in 1887.

† Not, indeed, the most powerful force. It is probable that, at least in earlier times, warfare, which has been largely waged by the dolicocephalic elements, has been the chief agency in diminishing their relative numerical place in the total population.

States army statistics, gathered at the time of the Civil War, raise perhaps a presumption that the law holds good in this country.\* Far more weighty evidence is to be found in recent anthropological researches, establishing the same or analogous results with reference to diverse populations in various parts of France.

The urban concentration of the more dolicocephalic elements in the department of Ille-et-Vilaine (Brittany) is shown by the preliminary results of a very recent investigation of the army conscripts of that region conducted by Dr. Lapouge. The average cephalic index of the first 25 subjects from the rural cantons was found to be 85.3; while the average index of the first 25 subjects from the urban cantons of Rennes (the principal city of the department) was 82.4, or about three points lower than that of the country population.† The city population is, then, owing to the influx of the long-headed type (and perhaps also the superior power of that type to survive the selective conditions of the city), much the more dolicocephalic.

Precisely analogous results have been reached by Dr. R. Collignon in the south-west of France. Dr. Collignon has had the kindness to inform me that in a recent investigation in the region about Bordeaux (the detailed results of which are soon to be published) he has found that in the case of every city studied—Bordeaux, la Rochelle, Bayonne, Pau, and Tarbes—the urban population is less brachycephalic than that of the suburban communes, and that of the suburban communes is in turn less brachycephalic than that of the surrounding country.‡ This evidence is the more significant, inasmuch as it comes not only from

\* See pp. 171, 183 of this article.

† Letter from Dr. Georges de Lapouge, July 25, 1895.

‡ Letter from Dr. R. Collignon, November 20, 1894. I take this occasion to express my thanks to Dr. Collignon, Dr. A. Fallot, Dr. Durand de Gros, and Dr. C. Debierre for their kindness in answering inquiries on the investigation embodied in the present article.

an anthropologist of great authority, but from one who has been a decided sceptic, if not indeed an adverse critic, with reference to the attempted formulation of a law of the concentration of the dolicocephalic element.

The evidence cited immediately above shows the presence in a number of cities of a disproportionate share of the dolicocephalic element. In the light of Ammon's investigations it must almost inevitably be concluded that the more dolicocephalic character of the urban population in these parts of France is due (as in Baden) to the migration thither from the surrounding country of the more dolicocephalic element of the rural population; in other words, that we have here phenomena which verify Ammon's law. Still, it must be admitted that the phenomena as here presented rather attest the results of the operation of the law than exhibit its direct and immediate action. The data now to be presented directly support the law in its primary statement,—the draining cityward from the country of its more dolicocephalic population.

Some years ago Dr. A. Fallot measured at Marseilles a number of residents of that city who had migrated thither from the neighboring departments of Var, Alpes-Maritimes, Vaucluse, and Basses-Alpes.\* Dr. Collignon subsequently combined the figures thus obtained by Dr. Fallot with figures obtained from his own measurements upon army conscripts in the respective departments,† very naturally failing to take into account the fact that Dr. Fallot's subjects, being migrants from the departments, were not typical of the stationary populations thereof. Now, by utilizing the combined results as stated by Collignon, and the figures previously published by Fallot, it is possible, by a simple mathematical process, to recover

\* The results of this investigation were published in the *Revue d'Anthropologie* (1889, pp. 324, ff.) The fact that the subjects were migrants to Marseilles is confirmed by a letter which Dr. Fallot has kindly written me.

† Dr. R. Collignon, *L'Indice Céphalique des Populations Françaises* (Paris, 1890), p. 2.

the purely original data added by Collignon. In other words, we are thus able to obtain for comparison two series of average indexes, one series representing a number of the stationary population of each of the four departments, the other series representing a number of emigrants from each. The comparison brings out the striking fact that the emigrants are in every case less brachycephalic than the stationary elements. The emigrants from Var are 2.75 points less brachycephalic than the stationary population; those from Alpes-Maritimes, 2.42 points; those from Vaucluse, 1.37 points; those from Basses-Alpes (though here the number of cases for comparison is too slight to give much weight to the result), fully 4 points.\* The following table shows the two series of indexes and the number of subjects in each category:—

\* Dr. Fallot has called my attention to the fact that a similar difference is observable between his figures and Collignon's in the case of Corsica, in which case his own subjects were taken from the resident population instead of from emigrants, and in which, therefore, the law of Ammon offers no explanation of the difference. An explanation is, however, easily found in the peculiar circumstances under which the respective subjects of the two observers were chosen: (1) The native population of Corsica is much more dolicocephalic than that of the continent (being probably composed largely of the Mediterranean type). There is a considerable immigration of comparatively brachycephalic population from France and Italy, and also a considerable counter-movement of the dolicocephalic native Corsicans to France. In consequence of this double movement the average index of the population is constantly rising. Now, Collignon's figures (being obtained from army conscripts) represent a younger, and, in view of what has been said, more brachycephalic, portion of the people. (2) The native Corsicans (particularly those of the highlands, the most dolicocephalic part of the island) have a great aversion towards the required army service, and frequently flee to the mountains to avoid it, preferring to live a sort of outlawed life until they can secure indemnity. This dolicocephalic element is therefore not proportionately represented in Collignon's figures, taken, as they are, from a body of army conscripts. (3) On the other hand, this very dolicocephalic element is more than proportionately represented in Fallot's figures. This element (the dolicocephalic mountaineers) is in Corsica exceeding turbulent and lawless, and engaged in continual broils and petty warfare. It is, therefore, safe to affirm that the inmates of the prisons—and it was from them that Fallot's subjects were largely drawn—contain an altogether disproportionate share of the dolicocephalic element. Further explanation might be suggested; but the above is probably sufficient to account for the fact that Fallot's index for the Corsicans was 76.59, while Collignon's was 78.73.

DEPARTMENT.	STATIONARY POPULATION (COLLIGNON)		MIGRANTS (FALLOT).	
	Number of subjects	Average index.	Number of subjects	Average index
Var . . . . :	21	84.45	33	81.70
Alpes-Maritimes :	23	84.22	30	81.8
Vaucluse . . . :	12	82.55	35	81.18
Basses-Alpes . . .	2	87.42	30	83.42

The data hitherto presented have gone to show the dolicocephalic character of migration from the country to the cities. As a step towards a wider generalization, I now cite certain results at which I have arrived by the analysis of data formerly collected, with a quite different purpose, by Dr. Lapouge, and most generously placed by him at my disposal. The measurements were made at various points in the department of Hérault upon subjects then resident therein, but the children of natives of about a dozen of the neighboring departments. They concern, therefore, the character of migration not exclusively from country to city, but from the mountains to the plain, from a poorer to a richer region. In connection with data already published by Collignon they serve to show that migration — not merely urban immigration, but movement in a somewhat more general aspect — is especially a characteristic of the dolicocephalic element of the population.

Some comment and explanation is necessary before citing the results in tabular form. To take as the first illustration the department of Gard, we were able to muster 24 residents of Hérault whose fathers and mothers were both born in Gard, and who were therefore representatives of migratory families from that department. They were found to have an average index of 82.43. The index indicated by Collignon's figures (30 subjects) for the stationary population of Gard is 83.12. It therefore appears that the migratory element is slightly more dol-

cocephalic. The actual difference is greater than the bare averages indicate, and the evidence for the law stronger in reality than in appearance. In point of fact, most of our migrants from Gard came from the arrondissements of Alais and le Vigan, where the average index of the stationary population cannot be much under 85.\*

Considerations analogous to these last apply to the case of Aveyron, where Collignon's average is overweighted with subjects from Rodez or its vicinity, and is therefore somewhat low.† Nevertheless, the average index of the migrants will be seen to be about one point and a half below even Collignon's average for the stationary population.

It will be noticed that there are two exceptions to the uniformity of the table. In the case of Bouches-du-Rhône the migrants appear to be a shade more brachycephalic than the stationary population. In the case of Pyrénées-Orientales there is a more serious difference. These exceptions might be explained, at least in part, on grounds similar to those above rehearsed in the instance of Gard; but, in any case, the number of subjects from these departments being so small, not much weight should be attached to the exceptions. Conversely, not too much importance is to be given to the positive evidence, where the number of subjects is very small. Still, there is considerable cumulative evidence in the fact that, even where the data are so limited, and the chance for the play of disturbing factors so great, the law should be verified in so large a proportion of instances as we shall find to be the case.

The following table, then, shows the average indexes

\*These arrondissements are the part of Gard tucked in between Lozère, where the index is 87.87 (Collignon), and the north-east of Hérault, where (as proved by the detailed researches of Lapouge) the average is nearly 85. Nine residents of Alais and le Vigan yield an index of 85.89.

†See the observations of Durand de Gros, already cited. Debierre's index for Aveyron is over one point higher,—86.6.

of the migratory element from each of the several departments compared with the indexes of the stationary population : —

DEPARTMENT	STATIONARY POPULATION (COLLIGNON).		MIGRATORY ELEMENT	
	Number of subjects	Average index.	Number of subjects.	Average index.
Gers . . . . .	24	85.71	3	82.25
Ariège . . . . .	23	82.89	6	82.59
Pyrénées-Orientales . . .	47	78.63	8	81.80
Aude . . . . .	30	81.05	8	79.08
Tarn . . . . .	22	83.72	11	80.04
Aveyron . . . . .	332	85.50	25	84.04
Lozère . . . . .	14	87.87	11	87.13
Ardèche . . . . .	23	85.24	5	83.40
Gard . . . . .	30	83.12	24	82.43
Vaucluse . . . . .	47	81.53	3	80.27
Bouches-du-Rhône . . . . .	(?)	82.22	4	82.77

The above subjects were children of parents both natives of the same department. Those comprised in the following table are residents of Hérault, one of whose parents was born in one neighboring department, the other parent either in another department or in Hérault itself. The subject catalogued as Ariège-Aude, for instance, was born of parents one a native of Ariège, the other a native of Aude. It is accordingly necessary to compare his cephalic index with the mean between the average index of the stationary population of Ariège and the average index of the stationary population of Aude. The table on page 180 is constructed on this principle.

The only exception to the remarkable uniformity of the above table is the very trifling one in the case of the one subject whose parents were natives respectively of Pyrénées-Orientales and Aude. In the case of Gard-Hérault the migratory element appears to be but slightly more dolicocephalic; but, as explained before, the real difference is greater than the apparent one, and the evidence stronger in fact than on the face of the statistics.

NATIVE DEPARTMENTS OF THE TWO PARENTS	Mean between the average indexes of the stationary populations of the two departments.	Migratory Élément	
		Number of subjects.	Average index.
Ariège-Aude . . . . .	81.97	1	71.20
Ariège-Hérault . . . . .	82.69	1	81.82
Pyrénées-Orientales-Aude	79.84	1	79.90
Aude-Hérault . . . . .	81.77	2	81.02
Aude-Tarn . . . . .	82.38	1	81.08
Tarn-Hérault . . . . .	83.11	16	79.56
Aveyron-Hérault . . . . .	84.00	17	79.55
Aveyron-Vaucluse . . . . .	83.51	1	82.56
Lozère-Hérault . . . . .	85.18	2	83.67
Lozère-Gard . . . . .	85.49	3	83.93
Gard-Hérault . . . . .	82.81	11	82.74

The fact that seven out of our eleven subjects originated on the Gard side of their family, so to speak, from that part of Gard (Alais and le Vigan) which, as already explained, is much the more brachycephalic, and is not proportionately represented in Collignon's average for the department, gives an unduly brachycephalic tinge to the average index of our migrants. It would be fairer to compare with the mean of the averages of the stationary populations of the two departments (82.81) not the average of the eleven migrants (82.74), but the average of the four among them whose fathers or mothers were natives of the other parts of Gard (81.68).

Further confirmatory evidence comes from the recent investigations of Lapouge in Ille-et-Vilaine. But little explanation is needed with the table on page 181. It shows the average index of migrants to Ille-et-Vilaine from the several departments enumerated compared with the average index of the stationary population of the same departments.\*

The law of dissociation by displacement, formulated by Ammon, was the greater tendency of migration cityward on the part of the dolicocephalic elements of the rural population. I have already cited evidence to support a

\* Letter from Dr. Georges de Lapouge, July 25, 1895.

DEPARTMENT.	STATIONARY POPULA- TION (COLLIGNON)		MIGRATORY ELEMENT (LAPOUGE)	
	Number of subjects.	Average index.	Number of subjects.	Average index
Mayenne . . . . .	100	84.1	7	82.3
Manche . . . . .	919	83.1	5	82.2
Côtes-du-Nord . . . . .	2,027	83.7	9	82.9
Finistère . . . . .	238	82.8	13	81.6
Morbihan . . . . .	173	82.6	11	83.7
Loire-Inférieure . . . . .	160	83.7	6	83.3

somewhat more generalized form of the law of the displacement of this element; namely, that it is more given to movement, not only to the great cities, but in general from region to region, at least where the one region holds out greater inducements than the other to enterprise and ambition. Lapouge has found evidence for a still more generalized statement, and has accordingly formulated the general law of the greater mobility of the dolicocephalic element. The following additional evidence may be cited in support of the law as thus formulated.

Out of 846 natives of Hérault, 776 were born of parents natives of the same canton, the remaining 70 were born of parents who were natives of two different cantons. The first group of subjects were, that is to say, children of men and women both of whom married in the immediate region of their birth. The subjects of the second group were, on the other hand, children of parents one of whom at least married outside of his (or her) native canton. The first group, then, represent extremely stationary families: the second group represent families of a more migratory type. The average cephalic index of the first (stationary) group was 81.5: that of the second (migratory) group was 79.8.

The same result holds good as between the two groups of subjects, not only in the aggregate for the department, as above given, but in detail for each of the four arron-

dissements into which the department is divided. The following table shows that, in the case of all of these arrondissements, those persons representing families in which either the husband or the wife married outside the canton of birth are more dolicocephalic than those representing families where both husband and wife were natives of the same canton :—

ARRONDISSEMENT.	Men born of father and mother natives of the same canton.		Men born of father and mother natives of different cantons.	
	Number of subjects.	Average index.	Number of subjects.	Average index.
Montpellier . . . . .	448	82.1	35	81.1
Lodève . . . . .	81	82.2	10	79.6
Béziers . . . . .	148	79.9	14	78.4
St. Pons . . . . .	99	80.6	11	76.2
The department as a whole	776	81.5	70	79.8

By a further analysis of the data derived from a group of subjects already utilized in another connection, it is possible to obtain some further evidence analogous to that presented in the last table. The form in which the descriptions of the migrants to Hérault were originally recorded enabled me to distinguish in the case of the migrants from each department between those, on the one hand, who were born of parents natives of the same arrondissement and those, on the other hand, who were born of parents natives of different arrondissements.\* Only in the case of five departments were there available among our data two or more subjects of each category. The following table shows that in the case of all these departments except Aude (where there were only two subjects

\* These two categories are analogous to those of the last three tables, except that the arrondissement, instead of the canton, is taken as the geographical limit in contrasting the two categories, according as the parents were or were not born in the same limited area.

belonging to the second category) the subjects born of father and mother natives of the same arrondissement were always more brachycephalic than the subjects born of parents natives of different arrondissements :\* —

DEPARTMENT.	Men born of father and mother natives of the same arrondissement.		Men born of father and mother natives of different arrondissements.	
	Number of subjects.	Average index.	Number of subjects.	Average index.
Pyrénées-Orientales . . .	5	83.33	3	79.34
Aude . . . . .	6	78.08	2	81.17
Aveyron . . . . .	18	84.45	7	83.02
Lozère . . . . .	7	88.35	4	85.15
Gard . . . . .	22	82.77	2	81.10

Further confirmatory evidence is found in the result of Lapouge's recent investigation of the army conscripts in the department of Ille-et-Vilaine. Collignon's average for the conscripts of the department is 84.2. The first twenty-five subjects, among those measured by Lapouge, who were born of parents natives of different cantons of the department, is 83.2.

It appears, then, that (with inconsiderable exceptions) evidence from a number of distinct localities shows the remarkable fact that, contrasting the descendants of persons married in the immediate locality where both were born with the descendants of persons choosing their spouses outside of their immediate birthplace, the latter group is uniformly more dolicocephalic than the first. The explanation, of course, is that the parents of the latter group were themselves more dolicocephalic than the parents of the first group. In other words, this evi-

\* It should be stated that in the case of the departments of Tarn and Bouches-du-Rhône, where only a single subject of the second category is available in each department, that subject is in each case more brachycephalic than the respective average for the subjects of the first category. Not much weight is, however, to be attached to instances where only a single subject is represented in the result; and these exceptions to the table are therefore trivial.

dence points to the fact that the dolicocephalic type is, so to speak, more migratory, even in the matter of marriage.

It was evidence of this last peculiar sort that, taken in connection with the evidence (already in part summarized above) for the more general migration cityward and "plainward" of the dolicocephalic elements, led Lapouge, generalizing the law of Ammon, to formulate the law of the greater general mobility of the more dolicocephalic as compared with the more brachycephalic portion of the population.

The statement of such a far-reaching principle must of course be regarded as provisional. If the tone of the present article appears somewhat too dogmatic, it is partly because it has seemed best to state the results briefly and positively, and in a way that may possibly promote the collection of data which will tend either further to confirm or to refute the deductions drawn from those here presented. If the data utilized seem in some instances meagre, it should be remembered that the remarkable uniformity of results is perhaps even more remarkable because the very scantiness of the data gives so much the more chance for the influence of accidental disturbing causes, and that the uniformity of the facts drawn from varied, independent sources gives a force to the evidence which ought not to be disregarded.

The degree of universality with which the law of the greater mobility of the dolicocephalic elements may hold good among different peoples forms a question of great interest. We have seen it to be true in certain localities in Germany and in many diverse regions in France; and there is (in the absence, so far as the writer is aware, of any contradictory evidence) a strong presumption that it holds good throughout France and at least the southern portion of Germany. But would the same law be found to exist in a region where the average population is of

more dolicocephalic type, as, for example, England or the United States? We have seen that among the populations we have been considering the brachycephalic elements are stationary as compared with the relatively dolicocephalic elements; but it does not follow necessarily that these latter are more stationary than the still more dolicocephalic type common among the population of England, or, in other words, that the migratory disposition increases inversely as the cephalic index falls. There is, indeed, some reason for thinking that, on the contrary, the migrants belong pre-eminently to a sort of intermediate type, which, markedly dolicocephalic among a so generally brachycephalic people as the French or South Germans, would not figure as exceptionally long-headed among the English or Americans.\* It is therefore well to be cautious in attempting either to verify or to refute the law, as at present stated, with evidence drawn from an Anglo-Saxon community.

Moreover, there is, so far as I know, but little evidence which is now available (though much might without great difficulty be collected) with reference to analogous phenomena of dissociation by displacement in this country or in England. There is one important body of data which, however, tend indirectly to support the validity of the law, as regards both internal migration in the United States and international migration to the United States. This evidence is in the facts already cited from

\* Certain English statistics, although they do not directly concern the question of migration, suggest the above hypothesis.

Since the above was written, my attention has been called to the researches of Dr. Oloriez, *Distribucion Geografica de l'Indice Cefalico en Espana* (Madrid). The work shows that in Spain there is no such close correlation between the morphological character of population and its migration as in France and Germany. The Spanish population, although, of course, radically different ethnologically from the English, has about the same average index; and the index of various sections of the country is very uniform. It seems probable that in Spain (as perhaps in England) the migration is largely composed of a type which is not exceptionally long-headed among a so generally dolicocephalic population.

Topinard, and established by the army statistics of the Civil War, that the people of the United States were, on the average, taller than those of any European nation, and that the migrants within the country from the Eastern to the Western States were taller than the resident population of the latter. The significance of these facts, in connection with our present inquiry, appears when it is remembered that the only constituent of the European populations which could furnish a body of migrants of the average height of the American soldiers is the dolicocephalic blond element. It is possible, indeed, that the conditions of life in America may by a selective process have developed a race somewhat taller than the original migrants. But, even if this is so, it remains almost certain that the migrants have in the first instance averaged exceptionally tall as compared with the stationary European populations; and it is extremely probable that they have been composed of an exceptionally large proportion of the tall dolicocephalic element of the population. In the same manner it is highly probable that the further movement of population from the East to the West is made up mainly of the same element. In other words, these facts strongly suggest that the law of the superior mobility of the (at least relatively) more dolicocephalic elements of population applies also to English and American populations, and generally to the vast phenomena of European emigration. If so, it is obvious that this law may furnish one means of attacking the profoundly significant problem of what effects these immense migratory movements will have upon the quality of the populations of the lands whence they spring and of the regions to which they are directed. But, even if the law should not be capable of these wider applications, it at least gives a more intimate insight than has hitherto been possible into the working, under certain conditions, of the forces of social selection.

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